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Long term effects of public policy for displaced workers in Sweden – shipyard workers in the West and miners in the North*

Henry Ohlsson Donald Storrie

28 August 2007

Abstract

The objective of this paper is to study the long term effects of public policy measures for displaced workers. Our focus is on the individuals affected by the cutbacks at the LKAB iron ore mines in northern Sweden in 1983 and the closure of the Uddevalla Shipyard in western Sweden in 1985. These workers not only experienced job loss, but were also the target group for extraordinary labour market policies. Using register data from Statistics Sweden (labour market status, earnings, education etc.), we follow those affected until 1999. We compare this with the corresponding development of a large sample other workers who lost their jobs because of plant closures in 1987–88 but who did not receive extraordinary measures. Estimations of the net effect of the extraordinary measures find that they did have positive long-term effects for the displaced shipyard workers and miners. They have higher employment, not higher unemployment, and higher earnings than the comparison group.

Keywords: involuntary job loss, displacement, plant closures, cutbacks, labour market policy, employment, unemployment, earnings

EconLit subject descriptors: J650, J680, L620, L720

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1 Introduction

The ongoing restructuring of market economies creates benefits for many but may be at the expense of significant losses for those displaced in the process. Currently, we observe how manufacturing and some service jobs move from Western Europe and the United States to low cost countries such as Eastern Europe and Asia, as exemplified by automobile manufacture and financial services. However, job loss due to global restructuring is hardly a new phenomenon. In the early 1980s it occurred on a grand scale in heavy industry such as mining, steel and shipbuilding. What policy lessons can be drawn from these earlier experiences?

Among the most extensive policy responses to restructuring occurred in Sweden the 1980s and probably the most prominent of policy interventions were the extraordinary policy measures following the closure of the Uddevalla Shipyard on the West coast and to the cutbacks at the LKAB mining company in the far North. Enough time has now elapsed to allow an evaluation of the long-term effects of these policies. Previous evaluations of these cases, subject of our respective PhD thesis, can be found in Ohlsson and Westerlund (1987) and Storrie (1993) and were based on survey data. Since then Statistics Sweden has made great advances in the development of census and tax registers for research purposes. Moreover, registers have been digitally back-dated to the early 1980s. In the previous studies the displaced miners and shipyard workers were identified through contacts with the two firms back in the 1980s. Crucially, their social security numbers were also obtained at that time. This now permits a register based follow-up of the labour market experiences of the miners and shipyard workers from when they lost their jobs up to the end of the millennium and the identification of a more appropriate control group than was previously available.

It is very well established in research from the United States that job displacement has long-term effects on earnings (Ruhm, 1991; Jacobson et al., 1993; Stevens, 1997). The evidence from Europe is both sparser and less unanimous. Gregory and Jukes (2001) compare the evidence in European countries with those in the United States and conclude that the losses on re-engagement in Europe are lower, possibly negligible and, where they exist, are more quickly overcome. Huttunen et al. (2006) found rather small long-run effects in Norway.

However, Eliason and Storrie (2006) find significant long term negative effects for employment, unemployment and earnings in Sweden. As the comparison group in this paper, those displaced without extraordinary measures, constitutes the study group in the Eliason and Storrie (2006) paper, our point of departure is that there are long term negative effects. This paper then examines whether the extraordinary measures implemented in Uddevalla and in the North yielded long-term effects compared with other displaced workers, who did not receive extraordinary policy measures.

The short-term costs of displacement are usually attributed to foregone earnings during unemployment and loss of firm- and industry-specific human capital (Hamermesh, 1987). The literature is less explicit concerning the mechanisms

behind the longer-term effects. The unemployment scarring literature, for example, Ellwood (1982), Arulampalam (2001), Böheim and Taylor (2002), refers to a number of factors such as permanent loss of firm-specific human capital, the deterioration of general human capital during a spell of unemployment, and that potential employers may use previous labour market history as a signal of productivity. However, Stevens (1997) showed that long-term earnings effects may be related to multiple job losses and Hall (1995) also suggests that the persistence might be explained by high turnover among subsequent low-tenured jobs.

Eliason and Storrie (2006) could not fully determine the mechanisms behind the negative effects. However, the displaced Swedish workers did not experience much initial unemployment so they attribute less credence to the unemployment scarring explanation. They also note that the employment rate differential between the displaced and non-displaced was almost eradicated three years after the initial displacement. However, with the advent of the very severe recession that hit the Swedish economy in the early 1990s, the employment rate differential then increased. Thus they place more emphasis on the recurrent job loss hypothesis.

Despite a very extensive ALMP literature, it is extremely rare that measures specifically addressed to workers displaced as result of restructuring are properly evaluated. There are, of course, innumerable case study follow-ups of workers displaced at restructuring where active policy measures have been applied. Exceptionally few of these studies have any possibility of determining the added value of policy on labour market outcomes, due to the lack of an appropriate control group. While there are registers or other sampling frames of unemployed people from which to extract a control group of non-participants, there is no obvious and easily accessible such sampling frame for displaced workers. The Kluve et al. (2007) overview of over 100 European evaluations of ALMP measures could only identify one that focused on displaced workers and that fulfilled the basic scientific requirements in this respect. Winter-Ebmer (2006) evaluates the extensive and innovative redundancy project conducted by the Austrian Steel Foundation by comparing the outcome of those ex-employees of the firm that participated in the programme with those who did not. Obviously this raises some difficult selection problems.

We are not aware of *any* research on the effects of labour market policy addressing displacement in the long term. This is hardly surprising as the data requirements for such research are immense. Register data is essential for research on long term effects as it overcomes the serious problems of recall bias and sample attrition. The linked employer-employee register data can also identify all other workers who lost their jobs due to a plant closure in the mid 1980s.¹ These closures were not accompanied with the extraordinary measures in Uddevalla and LKAB and so constitute the appropriate counterfactual case required for the evaluation of extraordinary measures.

In accordance with the evidence from the previous case studies Ohlsson and

¹Dustmann and Meghir (2005) point out that a major difficulty is that one in general observes separations not displacement. This problem can be overcome by focusing on plant closures.

Westerlund (1987) and Storrie (1993) based on survey data, we find no evidence of the extraordinary measures having any significant short run effect on employment or unemployment rates or earnings of those receiving extraordinary policy measures according to the register data. However, after 5–7 years significant policy effects do emerge. It is hardly immediately obvious why positive effects are found only in the long term.

We do observe, however, a clear increase in the level of schooling (largely corresponding to the advanced secondary education typically received by 16 to 18 year olds) among those receiving extraordinary measures compared to the comparison group. Indeed, a distinguishing feature of the extraordinary measures was a much broader orientation of the types of measures available to these workers compared to more traditional labour market policy. We interpret our results as showing that it was this broader orientation that yielded the long-run results.

Previous research on the costs of job displacement indicate that they are related to the loss of firm specific capital and, consequentially, that the empirical findings of long-term costs suggest that these losses may be long-lasting. The lack of short term effects of policy in this paper indicate that the quick-fix of a limited set of job specific skills are not sufficient to compensate for the loss of specific human capital that may have been built up over many years. General, non-specific human capital, takes time to yield benefits both due to the duration of the education itself and possibly due to the time required to find an appropriate match for skills that are not so obviously related to a particular occupation or match with a particular employer. Finally, we note that while our main result is that extraordinary labour market policy measures have positive long-term effects, we do not address the question of whether these effects were cost effective.

The paper is organized as follows: We present our two cases in the beginning Section 2. The previous evidence in the short term results is the topic of the rest of Section 2. Section 3 presents the data. In this section we present the study and comparison groups used in the present study. The rest of Section 3 is the core of the paper. Here we present the evidence on the long term effects of public policy on labour market status and earnings. Section 4 concludes.

2 The two cases and short run labour market outcome

In this section, we briefly summarize the two cases.² We describe the crisis that hit the companies, the policy response and the subsequent short run labour market outcomes.

²The LKAB research project was financed by The National Labour Market Board (AMS). The Uddevalla Shipyard research project was financed by The Swedish Expert Group For Labour Market Policy Evaluation Studies (EFA).

2.1 The LKAB mining company and Uddevalla Shipyard closures

The LKAB mining company

The crisis, the company and the employees. In the middle of the 1970s, the production of steel in Western Europe started to decrease and capacity at the state owned LKAB mining company, in Norrbotten in northern Sweden, the contracting market, could not be fully utilized. The management, however, chose not to reduce the labour force as the difficulties were considered to be temporary. Between 1979 and 1982 the company received SEK 4,000 million from the state, to enable continued operation.³ However, as by early 1982, the expected recovery did not occur LKAB gave notice of just under 800 projected redundancies. During 1982, the demand for iron ore further decreased leading to an additional 1,100 redundancies. When the first bout of redundancies was announced the company employed 6,200 persons. 1,800 of the redundancies were enacted and occurred by means of cutbacks at two mines and the closure of a third mine, of which only 200 were women and 400 were white-collared workers. Most left between May and August 1983 with a few leaving slightly earlier.

The response. A collective agreement on voluntary redundancies awarded various early retirement benefits for older blue collar workers and white collar workers. From May 1983, LKAB offered a one-off severance pay of SEK 60,000 to the blue collar workers who quitted at their own request.⁴ For white collar workers, an agreement was made concerning similar allowances for voluntary redundancy. Those who voluntarily left LKAB earlier got less severance pay. In the case of the blue collar workers, the severance pay was the same as in a normal labour force reduction process and was thus based on seniority. Apart from the oldest blue collar workers, who, to a large extent, accepted early retirement, it was primarily the younger blue collar workers who left LKAB. However, in the case of the white collar workers, the actual process differed from a normal labour force reduction process based on seniority. The severance payments can be viewed as the price the company had to pay to circumvent seniority.

After the 1982 parliamentary elections, the new Social Democrat government proposed the creation of a special organization with the aim of facilitating the finding of new jobs for the redundant LKAB workers. The Malmfältsdelegation (the Ore Mines District Delegation), was intended to be operational from 1 July 1983, i.e., the point of time at which the first employees were to have been given notice. However, about 1,000 persons had already left the company before the organization started operation. The Malmfältsdelegation was granted SEK 309 million by the Swedish Parliament, corresponding to SEK 170,000 per redundant employee.⁵ Of this sum, 14.5 million was intended for labour market training, while SEK 262

³This corresponds to GBP 740 million, EUR 1,100 million or USD 1,300 million in 2005 value.

⁴This corresponds to GBP 9,000, EUR 14,000 or USD 17,000 in 2005 value.

⁵The total grant corresponds to GBP 48 million, EUR 70 million or USD 87 million in 2005 value. The per capita grant is equivalent to GBP 26,000, EUR 39,000 or USD 48,000 in 2005 value.

million was allocated to job-creating measures in the form of relief works and special projects. The remaining funds were intended for administration and follow-up studies. The special organization faced fewer constraints than the regular labour market policy authorities. There were no restrictions on where to buy training nor on the design of job creation measures. Moreover, it could provide training benefits to those participating in university education and pay premia to those who completed training programmes. Finally, it awarded grants for business start ups and the former LKAB workers received more extensive employment exchanges services. Geographical mobility was not, however, a priority of the special organization.

The Uddevalla Shipyard

The crisis, the company and the employees. One of the most dramatic changes in the structure of the post-war Swedish labour market was the rise and fall of the shipbuilding industry. Fuelled by the post war boom, the industry exhibited exceptionally high returns to equity (Bergström and Södersten, 1979). Even if profitability subsequently declined substantially the sector continued to grow and by the early 1970s, Sweden was the largest shipyard producer in Europe (launched dead weight tonnes) and second only to Japan in the world, see Heseler (1988). The closure process began in 1971, with the closure of Lindholmens Shipyard in Gothenburg, and just over ten years later the production of ships had ceased to exist. Given the world-wide market share of shipbuilding in such a small country as Sweden, its subsequent rapid contraction, constitutes a remarkable case of rapid structural change. The industry was largely based on the West coast (and predominately close to Gothenburg). The regional decline in shipbuilding was accompanied by rapid increase in automobile manufacturing at Volvo and SAAB.

Uddevalla shipyard was founded in 1946 and by 1959 it was the third largest in the world, in terms of launched tonnage, and had over 3,700 employees. As it began to incur losses the State became joint owner in 1963 and shed over 1,000 jobs up to the end of the decade. During the seventies employment again increased and in 1978 it launched the largest ship ever built in Sweden. However, given its specialization in large oil tankers, the collapse of this market at the end of the decade led to massive losses. In December 1984, the decision was taken by the company, by then fully state owned, to close the yard.

The response. As with the closure of all other major shipyards the closure of the yard led to extraordinary policy measures. However, both in terms of funds allocated and a wide range of measures implemented, the Uddevalla Package announced in 1985 was probably the most ambitious policy response to a single plant closure ever in Sweden. Apart from the more traditional labour market and industrial policy measures, the package included the construction of a motorway (linking the town with Gothenburg), the building of a tourist centre and tax rebates in order to persuade Volvo to locate an automobile assembly plant on the old yard site. The

Table 1: The labour market situation a few years after closure and cutbacks.

	The LKAB Case		The Uddevalla Case
	June 1985 ≈ 2 years after	October 1986 ≈ 3.5 years after	September 1987 ≈ 2.5 years after
Labour market status, %:			
Employed	50	49	63
Labour market policy measures	14	4	11
Unemployed	3	8	2
Not in the labour force	33	39	24

Note: The LKAB sample consists of people who were younger than 60 when they left, the Uddevalla sample of people younger than 58 when they left.
Sources: Ohlsson and Westerlund (1987) and Storrie (1993)

total cost of the Uddevalla Package was SEK 1,482 million.⁶ Most of these funds were spent on the motorway. SEK 127 million were allocated to active labour market policy measures (exclusively directed to the yard employees) and a further SEK 350 million were spent on industrial policy measures. Thus, while the Uddevalla case may be seen as the typical type of policy response to the closure of this industry, the scale of the response was unusually large.

2.2 Short term results – previous evidence

In Table 1, we present the labour market status of the displaced workers a few years after the cutbacks of LKAB and the closure in Uddevalla based on our earlier surveys.

The previous evaluation of the LKAB cutbacks was based on three surveys. The three waves of mail surveys were done in March 1984, March 1985, and October 1986. Engström and Ohlsson (1986) summarized the findings. The short run results correspond to what would have happened if the regular active labour market policy measures had been expanded. Employment was not higher and unemployment spells were not shorter. It was not possible to find that vacancy duration had become shorter. The earnings of the displaced workers were not higher in the short run, and there were no effects of more training. Moreover, it was not clear if the job creation measures had been successful. Other work reported in Engström et al. (1988) and Engström and Löfgren (1989), was concerned with the effect that intensified employment services had on unemployment durations and risks for those made redundant compared to a group of job seekers from the inland of northern Sweden. The basic result of the latter study was that there was no evidence that unemployment durations were lower, and that the risk of becoming unemployed was lower for the displaced LKAB workers.

⁶This corresponds to GBP 200 million, EUR 290 million and USD 360 million in 2005 value.

In Uddevalla, in terms of the avoidance of unemployment, the labour market outcome for both the yard workers, and the region as a whole, suggested a very successful policy outcome. During the $2\frac{1}{2}$ -year follow-up period, there were never more than 47 unemployed (of a total work force of 2,165). By the end of the follow-up period, 24 percent of the workforce had permanently exited the labour force, see Table 1. 11 percent were temporarily out of the labour force (largely in labour market programmes, especially re-training). 47 percent were classified as employed in the regular labour market and a further 16 percent as employed with some form of wage subsidy. In the context of the duration of the follow-up period it is relevant to point out that for a large number of individuals, their labour market status, even $2\frac{1}{2}$ years after the closure, depended upon the extraordinary (and temporary) labour market policy measures, see Storrie (1993).

Due to the difficulties in obtaining an appropriate control group, there was no evaluation of the total effect of the extraordinary measures. However, there is a tentative comparison of the labour market outcome of the Uddevalla workers with a Danish shipyard closure, which was not accompanied with extraordinary policy measures, see Andersen and Storrie (1996). It was found that unemployment was much lower in the Swedish case, particularly among older workers. However, the employment rate was higher in the Danish case.

Storrie (1993) did however take up two policy issues. A particular feature of policy in the Uddevalla case was the very active involvement of the trade unions and management in policy implementation. It was found that this led to white-collar workers and those with long seniority receiving a disproportionately large part of the policy package. It was also found that the length of individual notice served increased the probability of avoiding an initial period of joblessness.

3 Evaluation of policy in the long run

This section describes which groups were identified in order to evaluate the long term impact of the extraordinary policy measures and the register data used to perform the follow up in the long term. It also provides a descriptive presentation of the long-term labour market outcomes based on register data. The effects of policy are then estimated with econometric models.

3.1 Data

We identify four groups of displaced workers; the displaced LKAB miners, the displaced Uddevalla shipyard workers, newly registered job seekers from the North of Sweden and all displaced due to plant closures 1987–88.

1. LKAB laid off 1,829 workers. After the exclusion of those who died during the displacement process, those older than 60 years and those who had moved abroad there remained 1,576 individuals at the time of the first mail follow up survey in March 1984. There were 1,041 responses to the survey

(66.1 percent).⁷ This constitutes the sample available for the LKAB workers as the social security number of those not responding were not kept. From an attrition study done at the time there are no indications that the labour market situation for those not responding was very different than for those in our sample, see Appendix B.

2. The displaced Uddevalla workers are all 2,163 individuals who were employed at the shipyard immediately prior to the announcement to initiate closure procedures with the trade unions. This was made available directly from the company's personnel files and included the social security number. This is a strength of this case compared to the LKAB sample. It is also the case the problem of selectivity for a plant closure is less severe than for a cutback. Those who lose their jobs at a cutback are not chosen at random. Seniority often is the key criteria in Sweden but severance payments may make people to self select to leave. The possibility of reemploying laid off workers may also cause excess layoffs. The strength with the LKAB sample is that there is a comparison group.
3. Newly registered job seekers in the northern inland region. The previous evaluation of the LKAB case was based on a comparison group consisting of a sample of men who registered as new job seekers at employment exchanges in the inland of northern Sweden August–October 1983. At the time there were 3,653 men registering at the employment exchanges. An initial random selection of 1,416, excluding those employed, left 1,343 individuals. The sample of job seekers from the inland of the North group got the same mail survey as the LKAB workers. There were 733 responses, giving a response rate of 54.6 percent. The attrition study showed that the labour market situation for those responding was slightly better than for those not responding, see Appendix B. The labour market situation for these people was probably as bad as it can get in Sweden, maybe with the exception of women in the same region. This is, in other words, the worst case scenario.
4. Displaced due to plant closures 1987–88. This is the data set used in Eliason and Storrie (2006), which provides full details of how the extraction was conducted. The linked employee establishment data set allows the identification of closing establishment and the social security number of the employees. The choice of these years is simply governed by the need to have data for a period before the job loss. It was not possible to go back any further, this means that the main events in our two cases took place some years before the events of this comparison group. The sample used here are employees from all the closures in 1987 and 1988 of establishments with at least ten employees. This is unfortunate but unavoidable. An advantage of the sample compared to most other research using register data is that it can identify

⁷Of these most, 672, left during April–July 1983.

workers who separate early in the closure process. Hamermesh and Pfann (2003) suggest that this is an important issue as those left at the end of the closure process, which often is the case in other research may not be a random sample of the work force. There are 19,617 displaced workers in this sample.

With the identification of the social security number a large number of human capital variables can be obtained from various registers, mainly used for census and taxation purposes. See Eliason and Storrie (2006) for a full description of the sources and definitions. In the next section we focus on three labour market outcomes defined as follows: employment status in November each year, incidence of insured unemployment (including part time unemployment and participation in labour market training) anytime during the year, and annual earnings.⁸ Those without wage income and no compensation for unemployment and labour market policy measures during the year are defined as not being in the labour force. A key dependent variable used in estimations is earnings. The employer files all wage payments to the tax authorities and, because practically all transfers in the Swedish welfare state, such as disability pensions and sickness and unemployment benefits, are liable to tax, the National Social Insurance Board also files income statements on such transfers (together with nontaxable social-assistance payments). The tax registers are also the source for the wealth variables.

3.2 Descriptive presentation of the long run labour market outcomes

Table 2 compares the labour market status for the four samples identified at the end of the observation period, in 1999, by age group. Young is defined as being 30 years or younger in 1985, this means younger than 45 years in 1999. The middle-aged were 31–40 years old in 1985 and 45–54 in 1999. The old were 41–50 in 1985 and 55–64 in 1999. And finally, the retired were 51– in 1985 and 65– in 1999. The samples are not balanced, the groups are only slightly smaller 1999 compared to the 1980s due to death and emigration.

In terms of all three basic measures of labour market status in the long run (15–17 years after displacement), the job seekers from the North group have the worst outcomes for all three age groups. This was in line with our expectation that they constitute a lower benchmark for labour market prospects in Sweden. Of most interest, however, is that for all three age groups the employment rate of the ex Uddevalla and LKAB workers was higher than the group of all job losers. This

⁸We have reason to believe that insured unemployment covers a very large proportion of unemployment as defined by the labour force survey (International Labour Organisation [ILO] definition). Between 1988 and 1992, roughly 70 percent of the ILO-defined unemployed received benefits (Björklund, 1996). Moreover, a large proportion of those not receiving benefits are those without an employment record, but all workers in our sample, with the exception of some of the unemployed from the North of the country were employed before displacement. The different measurement periods, determined by the availability of data, obviously imply that employed and unemployed are not exclusive states.

Table 2: The long term labour market outcome by age group in 1999, percent.

	Uddevalla	LKAB	job seekers, the inland of the North	job losers, plant closures
Young –30 1985, –44 1999				
Employed	88.2	84.7	79.7	79.7
Unemployed or Labour market policy measures	18.1	18.7	35.5	22.6
Not in the labour force	5.8	6.0	7.0	9.7
Middle-aged 31–40 1985, 45–54 1999				
Employed	81.7	87.1	68.5	77.7
Unemployed or Labour market policy measures	17.8	18.5	38.6	18.2
Not in the labour force	9.1	3.1	12.2	13.4
Old 41–50 1985, 55–64 1999				
Employed	62.5	53.1	38.7	58.0
Unemployed or Labour market policy measures	19.4	20.3	39.6	18.0
Not in the labour force	18.7	23.8	28.3	25.9
Retired 51– 1985, 65– 1999				
Employed	5.3	2.4	2.7	5.5
Unemployed or Labour market policy measures	1.4	1.6	1.8	1.4
Not in the labour force	84.9	83.9	87.6	84.7

Table 3: Place of residence and employment shares 1999.

sample	place of residence	number	share of sample, percent	employment share, percent
Uddevalla	Uddevalla	861	65.7	77.2
	elsewhere	450	34.3	75.8
	total	1,311	100	76.7
LKAB	Kiruna	344	49.4	79.4
	Gällivare	136	19.5	79.4
	elsewhere	217	31.1	78.8
	total	697	100	79.2
job seekers, the inland of the North	the inland of northern Sweden	436	78.0	64.7
	elsewhere	123	22.0	79.7
	total	559	100	68.0

is some indication that the special policy measures implemented in the two cases may have had some positive effect.

Regarding the differences between Uddevalla and LKAB one could have expected a better outcome in Uddevalla as it has a more diversified labour market than the LKAB region and is within commuting distance to the important industrial centres of Trollhättan and Gothenburg. This turns out only partly to be the case as the Uddevalla group has the highest employment outcome for the youngest and LKAB for the middle aged. The main differences are, however, to be found in the old group where the ex-Uddevalla workers have almost 10 percentage points higher employment rate than the LKAB workers.

One might suspect that geographical mobility has affected the probability that people are employed. Table 5 shows the relationship between geographical mobility and employment shares. About a third of the Uddevalla workers and the LKAB had moved in 1999. The employment shares do not, however, differ a lot between stayers and movers. This is not true for the job seekers from the inland of the North. The employment share for the movers in this sample is as high as far the the Uddevalla and LKAB workers. On the other hand, the stayers in this sample has a much lower employment share.

The fact that the workers displaced at LKAB were primarily due to cutbacks

and not closures raises the issue of whether the displaced have been re-employed at the firm. This is the case to a relatively large extent. By 1999, 20.8 percent of the non-retired LKAB workers were re-employed. And 32.0 percent of the non-retired LKAB workers were re-employed by LKAB sometime during the period 1985-1999.

The employment rate in 1999 for young LKAB workers who had never been re-employed was 83.4 percent. This is slightly lower than for all young LKAB workers, 84.7 percent, see Table 2. The pattern is similar for middle-aged and old LKAB workers, the employment rate among those never re-employed in 1999 were 84.2 percent and 51.0 percent. The corresponding shares including those sometime re-employed were 87.1 percent 53.1 percent.

3.3 Estimations of the long run impact of labour market policy

Our four samples differ in many respects, for instance, the share of women, the share born abroad and age. We have, therefore, estimated econometric models to control for the differences in measurable characteristics. We have also included interaction variables for each sample and year dummy variables to capture the group specific evolution for each sample.

We estimate probit models, with and without individual effects, for the likelihood of being employed (1985–1999) and the likelihood of being unemployed, or in active measures (1983–1999). Only those who had not reached the statutory retirement age 65 in 1999 are included in the estimations. Table 4 reports the estimations results for the control variables.

The employment and unemployment probabilities have the expected variation with age. Women are less likely to be employed and more likely to be unemployed. Those born abroad are also less likely to be employed and more likely to be unemployed.

We have also included explanatory variables that capture the situation in the beginning of the studied period. Being married in 1983 increases the employment probability and decreases the unemployment probability. The impact of having children younger than 18 years in 1983 is not significant in most cases. Education level in 1983 has the expected impact. The unemployment probability of an individual with long university education is considerably lower than for an individual with only short primary education. Higher household wealth in 1983 increases the employment probability and decreases the unemployment probability. Year dummy variables are included in all estimations.

As mentioned above, we have also included interaction dummy variables between year and, respectively, Uddevalla, LKAB and the job seekers from the inland of the North. The estimated coefficients of the interaction variables measure the difference in employment and unemployment probabilities each year for Uddevalla, LKAB and the job seekers from the North compared to the group of job losers because of plant closures. Figure 1 shows how the estimated employment probabilities, as measured by the interaction dummy variables have evolved. The

Table 4: Employment, unemployment and earnings of Uddevalla, LKAB and job seekers compared to job losers, 1983/85–1999.

	employment		unemployment		log earnings	
	probit marginal effect	RE probit marginal effect	probit marginal effect	RE probit marginal effect	OLS	RE
age	0.18 (17.3)	0.10 (17.6)	0.15 (15.3)	0.13 (17.6)	1.36 (52.1)	1.33 (57.4)
age ² /100	-0.68 (16.7)	-0.40 (17.1)	-0.58 (14.8)	-0.51 (17.1)	-5.13 (47.8)	-5.09 (53.2)
age ³ /10,000	1.16 (16.8)	0.71 (17.7)	0.95 (13.9)	0.84 (16.1)	8.54 (45.3)	8.56 (50.9)
age ⁴ /1,000,000	-0.74 (17.6)	-0.47 (19.1)	-0.56 (13.0)	-0.49 (14.9)	-5.26 (43.8)	-5.34 (49.9)
woman	-0.007 (4.83)	-0.005 (2.64)	0.004 (2.80)	0.009 (2.66)	-0.399 (94.4)	-0.396 (40.8)
born abroad	-0.080 (24.8)	-0.061 (10.5)	0.034 (10.0)	0.036 (4.93)	-0.175 (18.9)	-0.210 (10.4)
the situation 1983:						
married	0.036 (19.1)	0.025 (9.98)	-0.042 (19.8)	-0.038 (9.19)	0.080 (14.0)	0.095 (7.35)
child 0–6, dummy	0.004 (1.84)	-0.001 (0.47)	0.008 (3.89)	0.006 (1.44)	-0.053 (9.68)	-0.055 (4.43)
child 7–12, dummy	0.011 (5.70)	0.003 (1.19)	-0.007 (3.35)	-0.006 (1.52)	0.046 (8.16)	0.046 (3.53)
child 13–15, dummy	0.004 (1.52)	0.003 (0.90)	-0.002 (0.59)	-0.004 (0.65)	0.012 (1.71)	0.016 (1.00)
child 16–17, dummy	0.009 (3.29)	0.006 (1.76)	-0.011 (3.29)	-0.011 (1.79)	0.023 (2.74)	0.026 (1.35)
lower secondary education, dummy	-0.001 (0.22)	0.002 (0.46)	-0.009 (3.17)	-0.011 (2.01)	0.044 (5.90)	0.031 (1.83)
short upper secondary edu., dummy	0.026 (12.0)	0.019 (6.56)	0.003 (1.01)	-0.003 (0.61)	0.116 (17.1)	0.116 (7.59)
long upper secondary edu., dummy	0.043 (17.3)	0.022 (7.35)	-0.079 (28.7)	-0.062 (13.0)	0.289 (36.4)	0.304 (16.8)
short university education, dummy	0.087 (32.1)	0.042 (16.6)	-0.114 (36.4)	-0.083 (18.1)	0.421 (45.5)	0.452 (21.2)
long university education, dummy	0.089 (30.1)	0.041 (14.6)	-0.118 (34.1)	-0.087 (19.6)	0.635 (63.3)	0.670 (28.9)
log household wealth	0.0061 (28.4)	0.0038 (13.2)	-0.0048 (20.2)	-0.0046 (9.79)	0.0170 (27.2)	0.0208 (14.6)
n of observations	237,765	237,765	270,371	270,371	242,670	242,670
n of individuals		16,197		16,197		16,194
χ^2 / F	18,034	13,291	22,254	13,019	845.64	54,583
Prob > χ^2 / F	0.000	0.000	0.000	0.000	0.000	0.000
ρ		0.547		0.508		0.297
R^2	0.082		0.080		0.226	within 0.172 between 0.308 overall 0.225

Notes. Absolute t -values in parentheses. Reference category for education is primary education. The marginal effects are computed taking into account that there are polynomials in age. Year dummy variables are included and so are interaction dummy variables between year and, respectively, Uddevalla, LKAB, and the job seekers group. The estimated coefficients for the interaction dummy variables are reported in Figures 1–3 and Table 6.

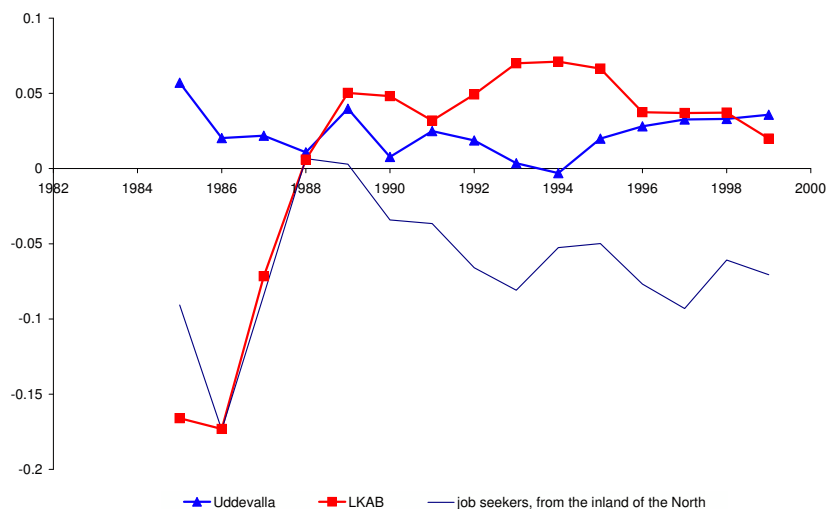


Figure 1: Estimated probability of being employed in November, 1985–1999.

parameter estimates are reported in Table 6 in Appendix A.

The estimated employment probability for the LKAB workers in 1985 was lower than for the sample of job seekers from the North and during 1986–1988 there are only small differences between these groups. This confirms the short term evaluation results from the mid 1980s studies. The Uddevalla workers’ employment probability was high in 1985 and 1986 (as many were still at the shipyard) but subsequently decreased down to level of all other groups around 1988.

However, from 1989 and onwards the Uddevalla and LKAB workers do better than the baseline comparison group of all other job losers and the job seekers from the North do appreciably worse. While the final outcome in 1999 for the LKAB workers and Uddevalla workers is quite similar, the paths to this common end are quite different. Up to the trough of the deep recession of the 1990s the LKAB have an appreciably higher rate of employment while the Uddevalla workers fall down to the same employment rate as the comparison group in 1993 and 1994. Since then however the Uddevalla workers exhibit a monotonically increase in employment compared to the other groups. From a policy perspective the most striking result is that since 1996 the employment probability of the Uddevalla and LKAB workers is 2–3 percentage points higher than the employment probability of the other job losers.

Re-employment affects the path of the estimated employment probabilities for the LKAB workers. The estimated probabilities are lower if only never re-employed LKAB workers are included.⁹ The path for the LKAB workers is still above that of the Uddevalla workers in the beginning of the 1990s.

⁹The estimation results are available on request.

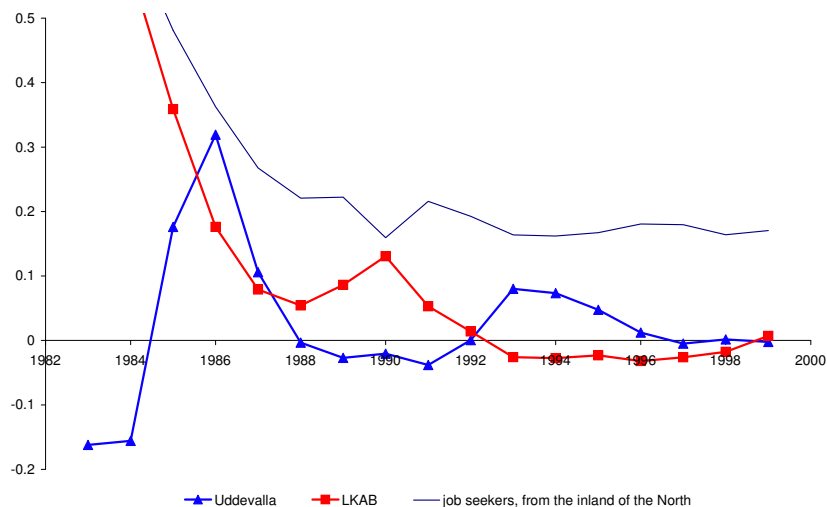


Figure 2: Estimated probability of being unemployed during the year, 1983–1999.

Figure 2 shows how the estimated unemployment (and in active labour market policy measures) probabilities have evolved.¹⁰ The picture is similar to that of the employment probabilities. However, the unemployment probabilities are lower for the Uddevalla workers than for the LKAB workers around 1990. The unemployment probability of the job seekers from the North is very much higher throughout the studied period. The Uddevalla workers' probability has varied more during the period than for the LKAB workers'. By the end of the period the unemployment probabilities for the two groups are very similar. These workers are 15 percentage points less likely to be unemployed than the job seekers from the North group.

The estimation results for earnings equations are also presented in Table 4. The age-earnings profiles have the expected shapes. Women have lower earnings than men, with the estimated difference around 40 percent, while those born abroad earn 20 percent less than the Swedish born. Being married in 1983 increases earnings during the period by 10 percent. The education level in 1983 affects earnings during the whole period 1983–1999. Those with a long university education in 1983 earn, on average, almost 70 percent more than those with only short primary education. There is a positive and significant relationship between household wealth in 1983 and earnings during the period.

Figure 3 shows the estimated coefficients for the interaction dummy variables between year and, respectively, Uddevalla, LKAB and the job seekers in the North (Table 6 in Appendix A reports the parameter estimates). Earnings drop after the job loss, in 1984 for LKAB and in 1987 for Uddevalla. From 1990 onwards the groups follow a very similar pattern as for employment probability in Figure 1. Ud-

¹⁰The parameter estimates are reported in Appendix A, Table 6.

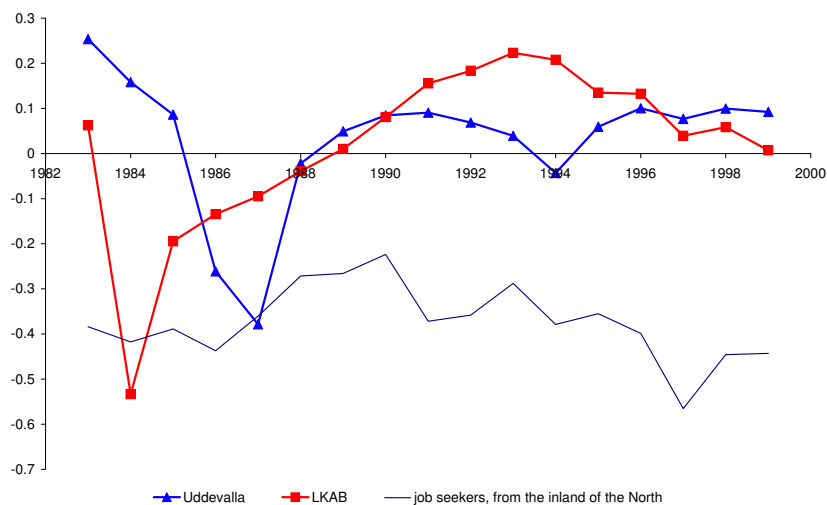


Figure 3: Earnings during the year, 1983–1999.

devalla and LKAB workers earn more than the job losers in the comparison group with the exception of the deep recession year of 1994. During the whole period studied, the job seekers from the North earn significantly less than the Uddevalla and LKAB workers and the comparison group.

3.4 Discussion and interpretation of the results

As was expected the comparison group of job seekers in the Northern inland was in fact the worst case scenario. However, the important results of this study are that the employment rate and earnings are significantly higher in the long term for the LKAB and Uddevalla workers, who received extraordinary measures, than those of the group of job losers who did not receive such measures. As the time profiles of the employment and earnings differentials are very similar. It would appear that the employment rate is the main determinant of the earnings differential over this period and not wage rates or working time.

However, there are quite different time profiles for Uddevalla and LKAB as the LKAB differential peaks in the early to mid 1990s, there is a corresponding dip for the Uddevalla workers. This is probably due to different industrial structure in the two regions. Uddevalla, located on the west coast, has a relatively high share of manufacturing employment and was severely hit by the exceptional recession of the early 1990s, see Figure 1.

In the north, the important LKAB company did rather well during the 1990s. The relatively favourable outcome for the LKAB case was to a relatively large extent due to re-employment in the company. This indicates the value of firm specific human capital when the firm continues to recruit labour. Thus for the

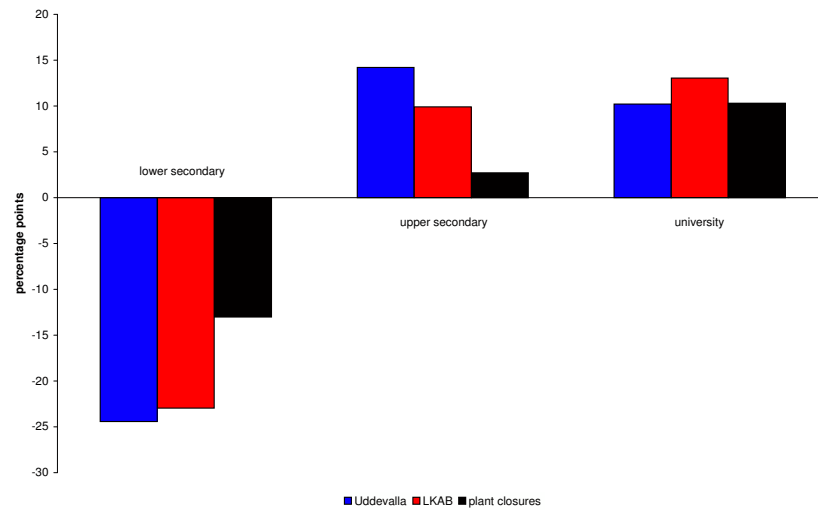


Figure 4: Change in highest education, 1983–1999.

LKAB workers who have stayed in the North, the pros of having non-redundant firm specific human capital has outweighed the con of living in a depressed area. For example, by the end of the study period (November, 1999), the percentage of the labour force either unemployed or in active measures in the Norrbotten County (the North) was as high as 14.6 percent. The corresponding figure in Western Götaland (the West) was 8.4 percent.

It remains to explain why we find positive effects of extraordinary measures in the long term. Focus on the Uddevalla case allows us to ignore the issue of re-employment at LKAB. Positive earnings effects are found in 1988, three years after the closure announcement and increase successively up to the start of the 1990s when recession hits. The effects subsequently decline even becoming slightly negative in the depths of the recession in 1994. However, since the recovery in the mid 1990s the outcome for the Uddevalla workers has been progressively better relative to all other groups. How can this time profile be explained and in particular why do largest effects occur towards the end of the follow-up period?

Figure 4 reports the change in the highest level education attained by the Uddevalla, LKAB and all other job losers group, between 1983 and 1999. It shows very different rates of change in the educational attainment at upper secondary level, and especially for the Uddevalla workers.

This is a very interesting observation. It suggests that the better labour market outcome, for in particular the Uddevalla workers, was due to the heavy investment in basic general human capital that was a special feature of both extraordinary policy packages. Metalworkers and miners, especially in the early 1980s often had a very low level of formal schooling. Lower secondary is the level typically attained by 16 year olds. In 1983, 52.8 percent of the Uddevalla workers had at

the most lower secondary education. This share was almost halved by 1999. The corresponding share among the LKAB workers with lower secondary education in 1983 was considerably lower, 34.4 percent. But by 1999, the share was down to 11.5 percent. Among the job losers in the plant closure sample 39.0 percent had lower secondary education at the most in 1983. This share only decreased by 13.0 percent during the period until 1999.

Our results suggest that much can be gained from increasing this basic level to that normally attained by 18 year old school leavers. This also would explain why effects were only found in the long term. Obviously there is an appreciable “locking-in effect” as basic education is typically of a relatively long duration. Moreover such human capital accumulation is not obviously relevant for a particular specific occupation or firm. Matching is likely to be a long process.

Our observation is that basic general human capital is important. This is also consistent with the result reported in Lamo et al. (2006). They find that specialized education, compared to general education reduces the mobility of workers and, consequently, their ability to adjust to changes in the economy.

4 Concluding remarks

The objective of this paper was to study the long term effects of public policy measures for displaced workers. Our focus was on the individuals affected by the cutbacks at the LKAB iron ore mines in northern Sweden in 1983 and the closure of the Uddevalla Shipyard in western Sweden in 1985, and who received extraordinary labour market measures. Using register data from Statistics Sweden we followed those affected until 1999. We compare their labour market outcome with a large sample other workers who lost their jobs due to plant closures in 1987–88 but who did not receive extraordinary measures.

In accordance with the evidence from previous case studies based on survey data, we find no evidence of the extraordinary measures having any significant short run effect on employment or unemployment rates or earnings of those receiving extraordinary policy measures according to the register data.

In accordance with the previous evidence on these cases using survey data, we find no evidence in the register data of the extraordinary measures having any significant short run effect on employment or unemployment rates or earnings according. However, after 5–7 years significant policy effects do emerge in terms of a higher employment probability, not higher unemployment probability and higher earnings than those in the comparison group only receiving the regular labour market policy measures.

The Uddevalla workers have had higher employment and earnings than the comparison group of job losers during the whole period with the exceptions of during the crisis in the beginning of the 1990s. The LKAB workers did better throughout most of the 1990s, also during this crises. Their outcomes, however, converge to those of the comparison group at the end of the studied period. The

long-run labour market outcome (labour market status and earnings) for the Uddevalla and LKAB employees is remarkably similar. This is somewhat surprising as the labour market in the West is appreciably better than in the North of Sweden.

However, the LKAB mining company did well during the 1990s. The relatively favourable outcome for the LKAB case was to a relatively large extent due to re-employment in the company. This indicates the value of firm specific human capital when the firm continues to recruit labour. Thus for the LKAB workers who have stayed in the North, the pros of having non-redundant firm specific human capital has outweighed the con of living in a depressed area.

It is not immediately obvious why positive effects of the measures are found only in the long term. We do observe, however, a clear increase in the level of schooling (largely corresponding to the education typically received by 16 to 18 year olds) among those receiving extraordinary measures compared to the comparison group. Indeed, a distinguishing feature of the extraordinary measures was a much broader orientation of the types of measures available to these workers compared to more traditional labour market policy, which included much formal education. We interpret our results as showing that this orientation was an important factor behind the positive results. This is also in line with the findings in Winter-Ebmer (2006).

Previous research on the costs of job displacement indicate that they are related to the loss of firm specific capital and, consequentially, that the empirical findings of long-term costs suggest that these losses may be long-lasting. The lack of short term effects of policy in this paper indicate that the quick-fix of a limited set of job skills are not sufficient to compensate for the loss of specific human capital that may have been built up over many years. General, non-specific human capital, takes time to yield benefits both due to the duration of the education itself and possibly due to the time required to find an appropriate match for skills that are not so obviously related to a particular occupation or match with a particular employer.

Finally, we note that while our main result is that extraordinary labour market policy measures have positive long-term effects, we do not address the question of whether these effects were cost effective. Whether these benefits are so large that they outweigh the costs of the measures is, however, an open question. It also an open question to what extent policy has compensated the displaced for their job loss.

Appendix A: Descriptive statistics and additional estimation results

The total number of people in our four samples is 23,554. However, 12 Uddevalla workers, 3 LKAB workers and 4 job seekers from the North are also on the sample with job losers because of plants closures. These 19 people are not included in the analysis, leaving the total sample to 23,516 people. In many cases we restrict the analysis to those younger than 65 years old in 1999. This sample has 19,205 observations.

Table 5 reports the descriptive statistics. The first row for each variable reports the mean, the standard deviation for continuous variables is reported within parentheses and the number of observations can be found in the last row for each variable.

Table 6 reports the estimated coefficients for the interaction dummy variables between the sample that the individual belongs to and year. These coefficients are also graphed in Figure 1 – Figur 3. The rest of the estimation results can be found in Table 4.

Table 5: Descriptive statistics.

	Uddevalla	LKAB	job seekers, the inland of the North	job losers, plant closures
woman, percent	7.7 1,370	13.4 718	0 593	45.1 16,517
born abroad, percent	2.9 1,375	3.8 718	3.7 593	9.3 14,782
the situation 1983:				
age	34.2 (8.9) 1,370	32.3 (6.8) 718	31.3 (7.5) 593	28.5 (10.0) 16,517
married	49.5 1,375	40.9 718	27.8 593	31.7 16,148
child 0–6, percent	23.4 1,375	32.7 718	22.3 593	20.4 14,782
child 7–12, percent	24.4	25.5	18.5	19.1
child 13–15, percent	14.1	12.3	7.1	10.1
child 16–17, percent	11.0	5.6	4.2	6.4
primary education, percent	32.6 1,308	10.8 697	12.3 572	13.0 14,572
lower secondary education, percent	20.2	23.7	19.6	26.0
short upper secondary education, percent	32.6	39.0	48.4	35.9
long upper secondary education, percent	9.2	16.8	10.0	12.8
short university education, percent	3.1	7.9	6.6	6.8
long university education, percent	2.4	1.9	2.4	5.5
household wealth, SEK 1,000	782 (1,117) 1,375	386 (625) 718	289 (551) 593	681 (1,731) 15,436
employment (1985), percent	95.0 1,370	81.3 717	85.0 593	83.1 16,354
unemployment, percent	2.5 1,375	79.5 718	87.2 593	16.1 16,158
earnings, SEK 1,000	79.0 (27.0) 1,375	71.9 (34.5) 718	45.3 (28.2) 593	53.7 (46.7) 15,436

Notes. The statistics concern those in the samples used in the estimations reported in Table 4, i.e., those younger than 65 in 1999. Standard deviations for continuous variables in parentheses.

Table 6: Sample specific effects over time, 1983/85–1999.

	employment, probit, marginal effects the inland of the North		unemployment, probit, marginal effects the inland of the North		log earnings, OLS	
	Uddevalla	LKAB	Uddevalla	LKAB	Uddevalla	LKAB
1983			-0.154 (13.6)	0.626 (31.4)	0.254 (8.97)	0.063 (1.65)
1984			-0.148 (13.1)	0.574 (29.9)	0.158 (5.60)	-0.533 (13.1)
1985	0.050 (4.58)	-0.153 (9.61)	0.172 (13.7)	0.353 (20.1)	0.086 (3.06)	-0.195 (4.87)
1986	0.018 (1.38)	-0.160 (9.06)	0.314 (24.0)	0.172 (10.5)	-0.261 (9.23)	-0.134 (3.42)
1987	0.019 (1.66)	-0.065 (4.02)	0.103 (8.83)	0.077 (5.03)	-0.378 (13.2)	-0.095 (2.44)
1988	0.010 (0.92)	0.005 (0.37)	-0.003 (0.30)	0.053 (3.43)	-0.022 (0.76)	-0.039 (1.01)
1989	0.035 (3.32)	0.044 (3.04)	-0.026 (2.14)	0.084 (5.00)	0.049 (1.70)	0.010 (0.26)
1990	0.007 (0.66)	0.043 (2.99)	-0.020 (1.13)	0.127 (5.84)	0.085 (2.91)	0.081 (2.10)
1991	0.022 (2.33)	0.028 (2.17)	-0.037 (3.06)	0.051 (3.10)	0.091 (3.09)	0.155 (4.00)
1992	0.017 (1.88)	0.044 (3.69)	0.000 (0.04)	0.014 (0.91)	0.069 (2.30)	0.183 (4.64)
1993	0.003 (0.38)	0.061 (5.90)	0.078 (6.90)	-0.025 (1.79)	0.039 (1.28)	0.223 (5.61)
1994	-0.003 (0.31)	0.062 (5.90)	0.071 (6.36)	-0.026 (1.90)	-0.043 (1.39)	0.208 (5.24)
1995	0.018 (2.13)	0.058 (5.46)	0.046 (4.14)	-0.022 (1.58)	0.059 (1.92)	0.135 (3.40)
1996	0.025 (3.05)	0.033 (2.98)	0.012 (1.09)	-0.031 (2.17)	0.100 (3.23)	0.132 (3.31)
1997	0.029 (3.58)	0.033 (2.95)	-0.005 (0.43)	-0.025 (1.76)	0.077 (2.45)	0.039 (0.98)
1998	0.029 (3.57)	0.033 (2.91)	0.001 (0.13)	-0.017 (1.16)	0.100 (3.14)	0.058 (1.44)
1999	0.032 (3.86)	0.018 (1.52)	-0.064 (4.44)	0.007 (0.45)	0.092 (2.88)	0.007 (0.17)
						-0.384 (9.00)
						-0.417 (9.76)
						-0.389 (9.06)
						-0.437 (10.2)
						-0.360 (8.32)
						-0.272 (6.27)
						-0.266 (6.18)
						-0.224 (5.15)
						-0.372 (8.49)
						-0.358 (7.98)
						-0.288 (6.12)
						-0.379 (8.20)
						-0.355 (7.63)
						-0.399 (8.43)
						-0.565 (11.8)
						-0.446 (9.21)
						-0.443 (9.11)

Notes. Absolute *t*-values within parentheses. Parameter estimates significant at the 5 percent level in bold.

Appendix B: Is the LKAB sample representative?

No surveys were sent in the second and third survey waves to those who did not respond to the first survey wave. An attrition study was, however, done in connection to the third survey wave. A mini survey with only one question was sent to those who did not respond to the first wave. The question was about the individual's labour market situation in October 1986.

The LKAB sample (responded to the first wave) at this time consisted of 1,179 people. Of these 1,049 (88 percent) responded to the third survey wave. The LKAB attrition sample (did not respond to the first wave) consisted of 361 people. The response rate to the mini survey was 47 percent (171 people responded).

Figure 5 reports the labour market situation for the LKAB sample and the LKAB attrition sample. There are no big differences between the two samples. It is, therefore, not possible from this to conclude that our LKAB sample is not representative for the all LKAB workers.

The job seekers from the North sample (responded to the first wave) at this time consisted of 833 people. Of these 738 (81 percent) responded to the third survey wave. The job seekers from the North attrition sample (did not respond to the first wave) consisted of 466 people. The response rate to the mini survey was 47 percent (221 people responded).

Figure 6 reports the labour market situation for the job seekers from the North sample and the job seekers from the North attrition sample. Here we find bigger differences. The people we include in the job seekers from the North group are employed to a higher extent and unemployed to a lower extent than those not included in the job seekers from the North group. It may be that the people we have information about in the comparison group are better off than those who were not possible to include.

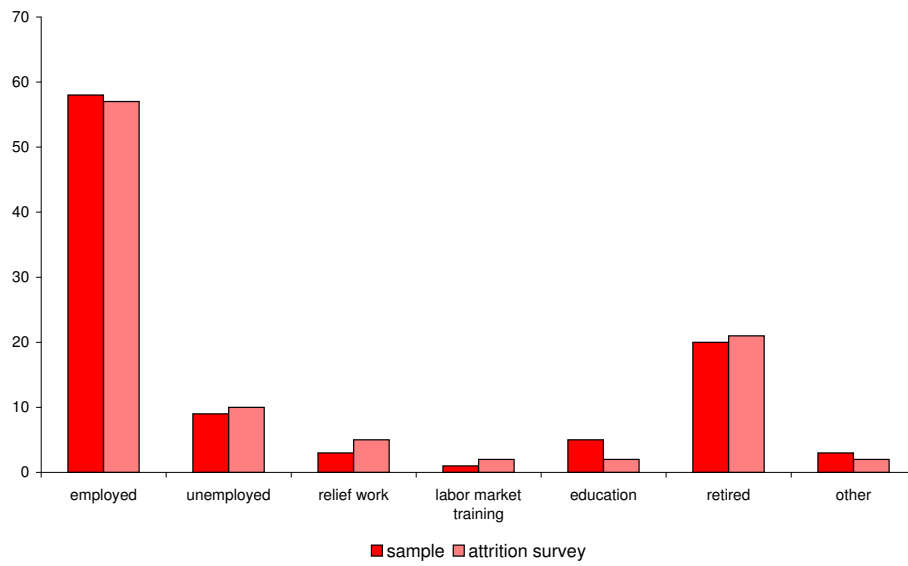


Figure 5: The LKAB sample

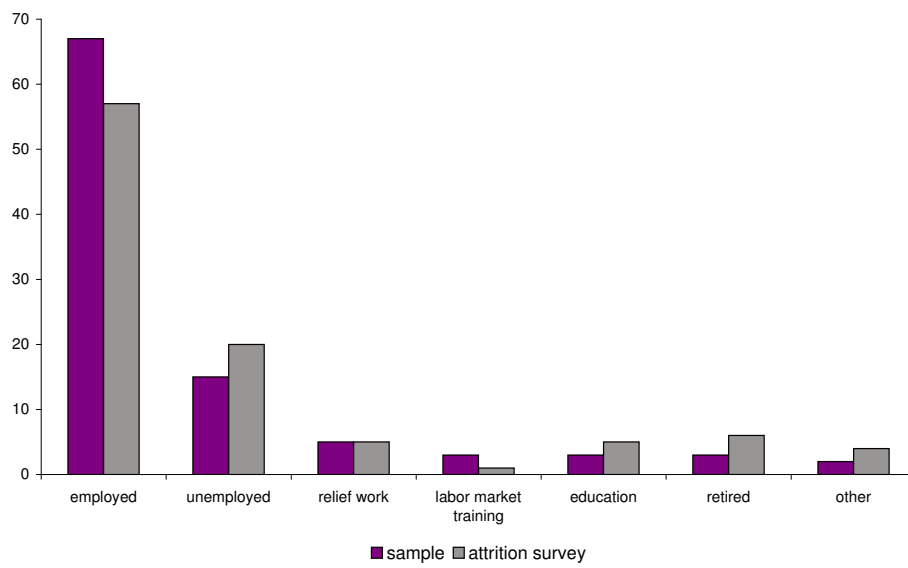


Figure 6: The sample of job seekers from the inland of the North

References

- Andersen, S. and Storrie, D. (1996). A comparison of early exits following the Elsinore and Uddevalla shipyard closures. In Wadensjö, E., editor, *The Nordic Labour Markets in the 1990s*, volume 2. North-Holland, Amsterdam.
- Arulampalam, W. (2001). Is unemployment really scarring? Effects of unemployment experiences on wages. *Economic Journal*, 111(475):585–606.
- Bergström, V. and Södersten, J. (1979). Nominella och reala vinster i svenska industriföretag (Nominal and real profits in Swedish industrial companies). *Skandinaviska Enskilda Bankens Kvartalstidsskrift*, 8(1–2):47–57.
- Björklund, A. (1996). Unemployment in Sweden. In Wadensjö, E., editor, *The Nordic Labour Markets in the 1990s*, volume 1. North-Holland, Amsterdam.
- Böheim, R. and Taylor, M. P. (2002). The search for success: Do the unemployed find stable employment? *Labour Economics*, 9(6):717–735.
- Dustmann, C. and Meghir, C. (2005). Wages, experience and seniority. *Review of Economic Studies*, 72(1):77–108.
- Eliason, M. and Storrie, D. (2006). Lasting or latent scars? Swedish evidence on the long-term effects of job displacement. *Journal of Labor Economics*, 24(4):831–856.
- Ellwood, D. (1982). Teenage unemployment: Permanent scares or temporary blemishes? In Freeman, R. and Wise, D., editors, *The Youth Labor Market: Its Nature, Causes, and Consequences*, pages 349–385. University of Chicago Press, Chicago.
- Engström, L. and Löfgren, K.-G. (1989). The duration of unemployment - Theory and empirical evidence. In *Trade Unions, Employment, and Unemployment Duration*, FIEF Studies in Labour Markets and Economic Policy. Oxford University Press, Oxford.
- Engström, L., Löfgren, K.-G., and Westerlund, O. (1988). Intensified employment services, unemployment durations, and unemployment risks. Working Paper 47, FIEF Trade Union Institute of Economic Research, Stockholm.
- Engström, L. and Ohlsson, H. (1986). Malmfälten i brytningstid (The mining district in transition). *Ekonomisk Debatt*, 14(6):472–480.
- Gregory, M. and Jukes, R. (2001). Unemployment and subsequent earnings: Estimating scarring among British men 1984–94. *Economic Journal*, 111(471):F607–F625.
- Hall, R. E. (1995). Lost jobs. *Brookings Papers on Economic Activity*, (1):221–256.

- Hamermesh, D. S. (1987). The cost of worker displacement. *Quarterly Journal of Economics*, 102(1):51–75.
- Hamermesh, D. S. and Pfann, G. A. (2003). Plant closing, learning and worker displacement. Technical report. Mimeo.
- Heseler, H. (1988). Shutdown of shipyards in Western Europe. In *Structural Change and Labour Market Policy*, Stockholm. Swedish Centre for Working Life.
- Huttunen, K., Møen, J., and Salvanes, K. G. (2006). How destructive is creative destruction? The costs of worker displacement. IZA Discussion Paper 2316, Institute for the Study of Labor, Bonn, Germany.
- Jacobson, L. S., Lalonde, R. J., and Sullivan, D. G. (1993). Earnings losses of displaced workers. *American Economic Review*, 83(4):685–709.
- Kluve, J., Card, D., Fertig, M., Góra, M., Jacobi, L., Jensen, P., Leetmaa, R., Nima, L., Patacchini, E., Schaffner, S., Schmidt, C. M., van der Klaauw, B., and Weber, A. (2007). *Active Labour Market Policies in Europe: Performance and Perspectives*. Springer, Heidelberg New York.
- Lamo, A., Messina, J., and Wasmer, E. (2006). Are specific skills an obstacle to labor market adjustment? Theory and an application to the EU enlargement. CEPR Discussion Paper 5503, Center for Economic Policy Research, London, UK.
- Ohlsson, H. and Westerlund, O. (1987). Effekterna av Malmfältdelegationens arbete (The effects of the Ore mine district delegations's work). Umeå Economic Studies 178, Department of Economics, Umeå University.
- Ruhm, C. J. (1991). Are workers permanently scarred by job displacements? *American Economic Review*, 81(1):319–324.
- Stevens, A. H. (1997). Persistent effects of job displacement: The importance of multiple job losses. *Journal of Labor Economics*, 15(1):165–188.
- Storrie, D. (1993). *The Anatomy of a Large Swedish Plant Closure*. Ekonomiska Studier 38, Department of Economics, Göteborg University. PhD thesis.
- Winter-Ebmer, R. (2006). Coping with a structural crisis: Evaluating an innovative redundancy-retraining project. *International Journal of Manpower*, 27(7–8):700–721.

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